FINAL METHANE MONITORING SUMMARY REPORT
FOR
SITE 1 – OLD BASE LANDFILL
FORMER NAVAL TRAINING CENTER BAINBRIDGE
PORT DEPOSIT, MARYLAND

CONTRACT NUMBER: N40080-12-D-0451
TASK ORDER 0007

Prepared For:

Department of the Navy
Naval Facilities Engineering Command Washington
1314 Harwood Street SE
Washington, DC 20374-2018

Prepared By

160 East Main Street, Suite 2F
Westborough, MA 01581

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By their signature, the following individuals certify their review and approval of this *Final Methane Monitoring Summary Report for Site 1 – Old Base Landfill, Former Naval Training Center - Bainbridge, Port Deposit, Maryland.*

Signature	**Date**
(b) (4)	03/30/16
Program Manager	
(b) (4)	03/30/16
Project Geologist	

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LIST OF ACRONYMS

APEX	APEX Companies, LLC
APP	Accident Prevention Plan
BDC	Bainbridge Development Corporation
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CH_4	methane
CO_2	carbon dioxide
COMAR	Code of Maryland Regulations
GP	gas probe
H&S	H&S Environmental, Inc.
IR	Installation Restoration
IRM	Interim Remedial Measure
LEL	Lower Explosive Limit
MDE	Maryland Department of the Environment
NAVFAC	Naval Facilities Engineering Command
Navy	U.S. Navy
NTCB	Naval Training Center Bainbridge
O_2	oxygen
OBL	Old Base Landfill
%	percent
PID	photoionization detector
USACE	U.S. Army Corps of Engineers
VOCs	Volatile Organic Compounds

1.0 INTRODUCTION

This report has been prepared by H&S Environmental, Inc. (H&S) for the Naval Facilities Engineering Command (NAVFAC) Washington under Contract N40080-12-D-0451 Task Order 0007 to summarize the results of methane monitoring events conducted at Site 1 – Old Base Landfill (OBL) at the former Naval Training Center Bainbridge (NTCB) in Port Deposit, Maryland. These monitoring events were conducted on a monthly basis during the period from January 2015 through December 2015.

Methane monitoring was conducted in accordance with the *Final Work Plan for Methane Monitoring at Site 1 – Old Base Landfill, Former Naval Training Center, Bainbridge, Port Deposit, Maryland* (H&S, 2015). The monitoring program consisted of monthly monitoring of methane gas from 26 landfill gas probes (GP) for one year in order to assess current methane concentrations along the landfill perimeter.

1.1 Site 1 – Old Base Landfill Background

The former NTCB is situated on approximately 1,185 acres in Cecil County, Maryland to the northeast of the town of Port Deposit (**Figure 1**). NTCB was constructed in 1942 as a training center for World War II Navy recruits and in the post-war years, became the host for various schools and functions (U.S. Navy [Navy], 2000). NTCB was formally closed in 1976 and transferred from the Navy to the Bainbridge Development Corporation (BDC) in 2000 (U.S. Army Corps of Engineers [USACE], 2007).

The OBL site is located on approximately 15 acres in the northwestern boundary of the former NTCB, separated from Maryland Route 276 by a facility fence and a small, unnamed stream (referred to in this report as the Western Channel) (USACE, 2007). The OBL was a solid waste landfill that operated from 1942 until base closure in 1976. Disposal activities were unregulated and the landfill is unlined. In 1995, the landfill was capped as an Interim Remedial Measure (IRM). Repairs and extensions to the cap were made in 1999 (Navy, 2000). Additional repairs were made to gas vents by the Navy in 2007 to 2008.

The existing cover system at OBL includes 33 gas vents on the landfill cap and 26 gas probes surrounding the landfill perimeter (AGVIQ, 2014). Based on methane monitoring data collected during the period from 2007-2014 from gas probes along the perimeter of OBL, high concentrations of methane (exceeding 100 percent (%) of the lower explosive limit [LEL]) have historically been observed in gas probes GP-6, GP-7, GP-8, and GP-12.

During the 2015 methane monitoring program, methane concentrations above 100% LEL were observed in gas probes GP-6, GP-7, GP-12, GP-16, GP-17, GP-18, and GP-19 (**Figure 2)**.

1.2 Site 1 – Old Base Landfill Methane History

As detailed in the *Methane Monitoring Plan, Old Base Landfill (OBL), Former NTCB, Port Deposit, Maryland* (APEX, 2010), a Final Landfill Investigation Report dated May 2007 for

Installation Restoration (IR) Site 1-OBL was prepared by USACE on behalf of the Navy at the request of the Maryland Department of the Environment (MDE). The work was completed on May 10, 2006, and consisted of field screening of 33 existing OBL gas vents to determine the distribution and concentration of explosive gases being vented. Ten gas probes (GP- 1 through GP-10) located along the perimeter of the OBL were also monitored to evaluate methane (CH_4) migration.

During the 2006 landfill investigation, the 33 landfill passive gas vents were screened for CH_4, carbon dioxide (CO_2), oxygen (O_2) and % LEL of CH_4 using a landfill gas analyzer and were also screened for volatile organic compounds (VOCs) using a photoionization detector (PID). Screening results of the passive gas vents identified that the vents located along an east-west trend were venting significant concentrations of methane, which was noted as evidence that the vent system was functioning as designed. At the time, the highest concentrations were reported in the center of the landfill (gas vent G-24 at 538% LEL for methane).

Ten gas probes (GP-1 through GP-10) located along the perimeter of the OBL were also monitored. The probes along the north, east, and south indicated that landfill gas was not migrating in these directions. However, several gas probes located along the western perimeter of the Site 1-OBL exhibited methane concentrations exceeding the 100 % LEL. The report concluded that while methane concentrations were over 100% of the LEL in gas probes located along the western perimeter of the landfill cap, they were lower in a westward direction toward the property boundary, as confirmed during a methane soil gas survey in 2005. According to the report, it was believed that the Western Channel acted as a discharge location to vent methane and other gases due to its lower elevation relative to the landfill and the gravel and stone that line the channel. The Code of Maryland Regulations (COMAR) 26.04.07.03b(9) prohibit landfill operations which cause explosive gasses in excess of 25% in facility structures. Since no facility structures existed on the western side of the landfill, the report concluded that the 25% LEL requirement was not applicable. The report also concluded, based on the corresponding sampling results, that the property appeared to be in compliance with the above regulation.

A Final Closeout Report for OBL was prepared by Shaw in January 2008 on behalf of the Navy. According to the report, five additional methane monitoring probes (GP-11 through GP-15) were installed near the property boundary along Maryland Route 276. These methane monitoring probes were installed along the western portion of the landfill to monitor methane west of the Western Channel. APEX performed methane monitoring at the landfill from December 2007 to September 2011 on a semi-annual basis and then quarterly through 2014. Methane monitoring data from 15 methane monitoring probes between 2007 and 2014 indicate that high concentrations of methane (exceeding 100% LEL) had been observed in gas probes GP-6, GP-7, GP-8, and GP-12 (AGVIQ, 2014). Later in 2014, AGVIQ performed another methane investigation on behalf on the Navy and installed an additional 11 gas probes (GP-16 through GP-26) in the area of high methane detections along the Western Channel.

2.0 SUMMARY OF METHANE MONITORING ACTIVITIES

The current scope of work included the monitoring of 26 methane gas probes (GP-1 through GP-26) at the Site 1 – OBL on a monthly basis for a period of one year (January through December, 2015). The purpose of these methane monitoring activities is to collect sufficient data to assess current methane concentrations at the Site 1 – OBL.

Methane monitoring was conducted in accordance with the *Final Work Plan for Methane Monitoring at Site 1 – Old Base Landfill, Former Naval Training Center, Bainbridge, Port Deposit, Maryland* (H&S, 2015). The Work Plan was submitted to the U.S. Environmental Protection Agency Region 3 and the MDE for review and concurrence prior to initiating the monitoring program. Details of the sampling and methodology for the landfill gas monitoring program are provided in the following subsections.

2.1 Instrument Calibration and Maintenance

The monthly methane monitoring of perimeter gas probes was performed using a Landtec GEM 2000™ landfill gas analyzer. The Landtec GEM 2000™ was calibrated prior to the start of each monthly field monitoring event. The calibrations were documented along with all other field notes taken at the site. The Landtec GEM 2000™ meter utilizes a self-compensating infrared gas analyzer and an internal sample pump capable of purging and drawing a gas sample in to the unit for analysis. The meter was field checked prior to use at each sample location to ensure proper function.

2.2 Landfill Gas Sampling and Methodology

Prior to collecting landfill gas readings, temperature, barometric pressure, humidity and general weather conditions were also noted upon arrival at each sample location and recorded on the methane monitoring recording form.

Upon arrival at the gas probe monitoring location, the landfill gas analyzer was turned on, or put into active mode (from stand-by mode), and the sample tubing was securely connected to the passive vent sampling port. The sample port valve was then open to allow landfill gas to be drawn into the instrument. Continuous readings were collected over a 3-5 minute duration until readings stabilized. This procedure allowed for sufficient purge time to collect representative landfill gas readings. The final steady state parameters were recorded as indicated below. Following monitoring activities, the sample port valve was closed and the protective cover secured before moving on to the next monitoring location.

The following parameters were recorded on the Monthly Methane Monitoring Logsheets included as **Appendix A:**

- $\%CH_4$
- $\%O_2$
- $\%CO_2$

- %LEL CH_4
- % Balance

Methane concentrations for all twelve months are summarized on **Table 1.** Methane monitoring gas probe locations for Site 1 – OBL are shown on **Figure 2**.

2.3 Field Documentation and Monthly Reporting

Monitoring documentation consisted of the completion of the monthly methane monitoring form and recording daily activities along with field observations in a Site Logbook. Information recorded in the Site Logbook included weather conditions, identity and arrival and departure times of personnel, management issues, any field observations, etc.

Monthly letter reports including the methane monitoring results were distributed to the USEPA, MDE, BDC, and NAVFAC following each event. A compilation of the monthly logsheets is included in **Appendix A** for reference.

3.0 SUMMARY OF MONITORING RESULTS AND FINDINGS

The methane concentrations observed during 2015 in the landfill gas probes ranged from 0.0% LEL to 738% LEL. Concentrations of methane above the LEL were observed at 7 of the 26 gas probes monitored: GP-6, GP-7, GP-12, GP-16, GP-17, GP-18, and GP-19 as indicated on **Table 1**. These gas probes are located on the southwestern edge of the landfill perimeter, with exception of GP-12 which is located on the southwest property boundary along State Route 276 (**Figure 2**). Methane was also detected below the LEL during 3 of the 12 events at GP-22 ranging from 6% LEL to 26% LEL. GP-22 is located northeast of GP-12 and is also located along the property boundary adjacent to State Route 276. Methane was not detected at any other perimeter monitoring locations.

Methane concentrations at gas probes GP-6, GP-7, GP-12, GP-16, GP-17, GP-18, and GP-19 are plotted on **Figure 3**. It is important to note that peak methane concentrations are anticipated in the warmer months from June through September. This is evidenced by methane concentrations observed at gas probes, GP-7 and GP-18. It is uncertain why no methane was detected at GP-22 during this peak period.

Maryland regulations (COMAR 26.04.07.03b(9) restrict landfill facilities from being designed or operated in such a manner that causes the concentration of explosive gases generated by the facility to exceed 25% of the LEL for gases in the facility structures and 100% LEL for gasses at the property boundary. While no facility related structures were observed, methane was detected above 100% LEL at GP-12 as shown on **Figure 4**, and at lower concentrations during three events at GP-22. Both of these gas probes are located on the far (west) side of an unnamed creek (Western Channel) and are along the property boundary adjacent to State Route 276. Because these gas probes are separated from the landfill by the creek, which is at a lower elevation compared with the landfill and inferred to be a shallow groundwater divide, it is uncertain as to whether the methane detected at these property boundary locations has migrated from the landfill.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Concentrations of methane above the LEL were observed at 7 of the 26 gas probes monitored during 2015 at the Site 1 – OBL Landfill: GP-6, GP-7, GP-12, GP-16, GP-17, GP-18, and GP-19. No facility related structures were observed in the vicinity of the landfill. Of these gas probes, only GP-12 was located near the landfill property boundary. Methane concentrations were also detected during 3 of the 12 monitoring events at gas probe GP-22. However, no methane was detected at this location during the warmer months from June through September when maximum concentrations were observed at the GP-7 and GP-18.

Maryland regulations (COMAR 26.04.07.03b(9) restrict landfill facilities from being designed or operated in such a manner that causes the concentration of explosive gases generated by the facility to exceed the LEL at the property boundary. While no ambient concentrations of methane were detected, methane concentrations at GP-12 were determined to be above the LEL during three monitoring events.

Both GP-12 and GP-22 are located along the western boundary of the property along State Route 276 on the far side of an unmanned stream (Western Channel). Methane migration from the landfill across this inferred groundwater divide seems unlikely. While methane at GP-12 above the LEL was detected, it is uncertain as to whether the Site 1 – OBL Landfill is the source of this methane.

To mitigate methane migration in the vicinity of GP-12, the Navy plans to install an interception trench with passive vents. A Draft Work Plan for this work is to be submitted to all stakeholders for review. No other actions are recommended at this time.

5.0 REFERENCES

AGVIQ, LLC (AGVIQ), 2014. *Draft Final Technical Memorandum – Gas Probe Installation and Monitoring Data Report, Site 1 Old Base Landfill (OBL), Former Naval Training Center – Bainbridge, Port Deposit, Maryland*. June.

Apex Companies, LLC (APEX), 2010. *Methane Monitoring Plan – Old Base Landfill (OBL), Former Naval Training Center – Bainbridge, Port Deposit, Maryland*. December.

H&S, 2015. *Final Work Plan for Methane Monitoring at Site 1 – Old Base Landfill, Former Naval Training Center, Bainbridge, Port Deposit, Maryland*. January 2015.

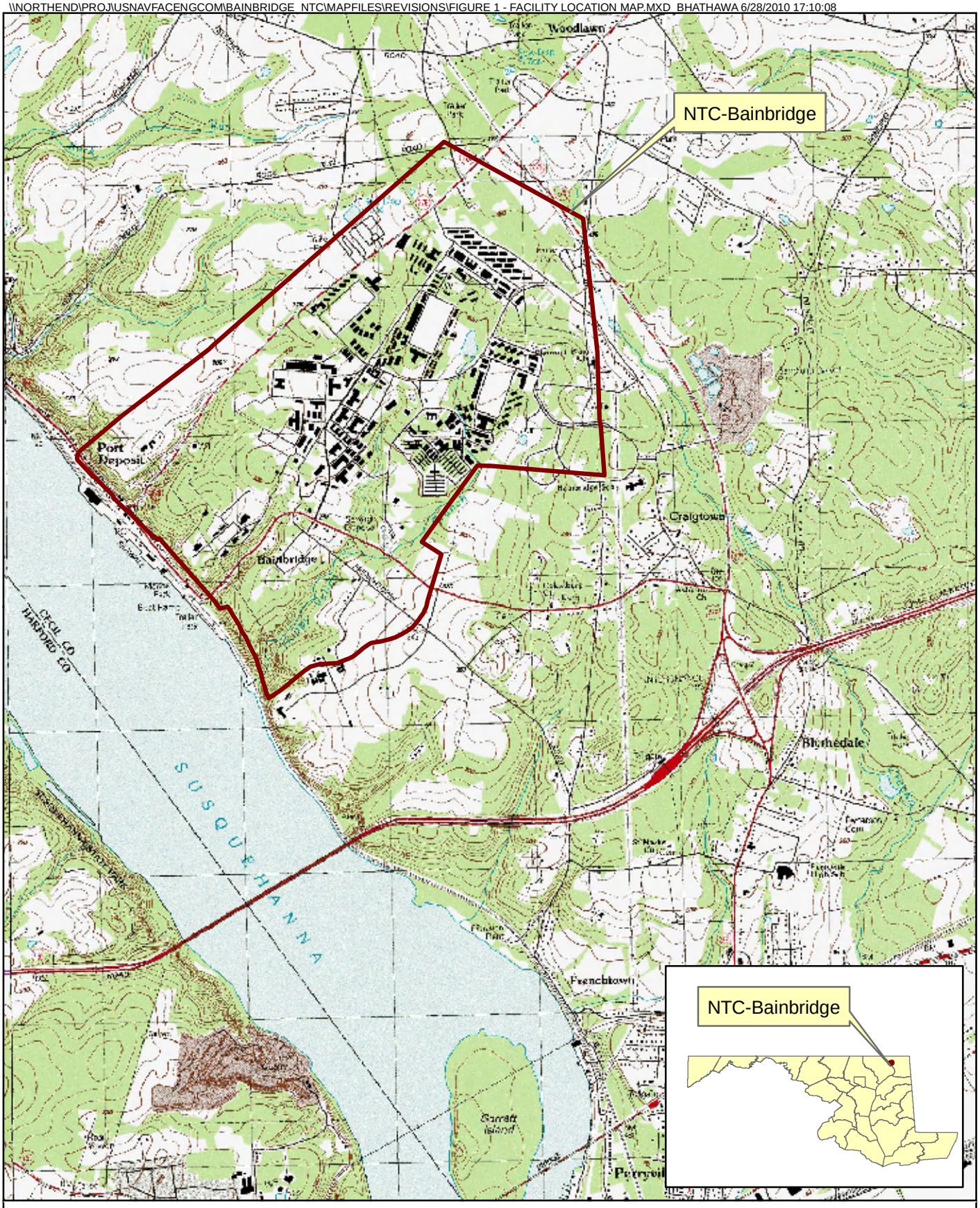
Maryland Department of Environment (MDE) – *Code of Maryland Regulations, COMAR 26.04.07.03b(9)*, http://www.dsd.state.md.us/comar/comarhtml/26/26.04.07.03.htm

U.S. Army Corps of Engineers (USACE), 2007. *Landfill Investigation Report for IR Site 1(Old Base Landfill), Former Naval Training Center - Bainbridge, Port Deposit, Maryland*. Final. May.

U.S. Department of the Navy (Navy), 2000. *Finding of Suitability to Transfer, Naval Training Center - Bainbridge, Port Deposit, Maryland.* February.

FIGURES

\\NORTHEND\PROJ\USNAVFACENGCOM\BAINBRIDGE_NTC\MAPFILES\REVISIONS\FIGURE 1 - FACILITY LOCATION MAP.MXD 6/28/2010 17:10:08



Legend

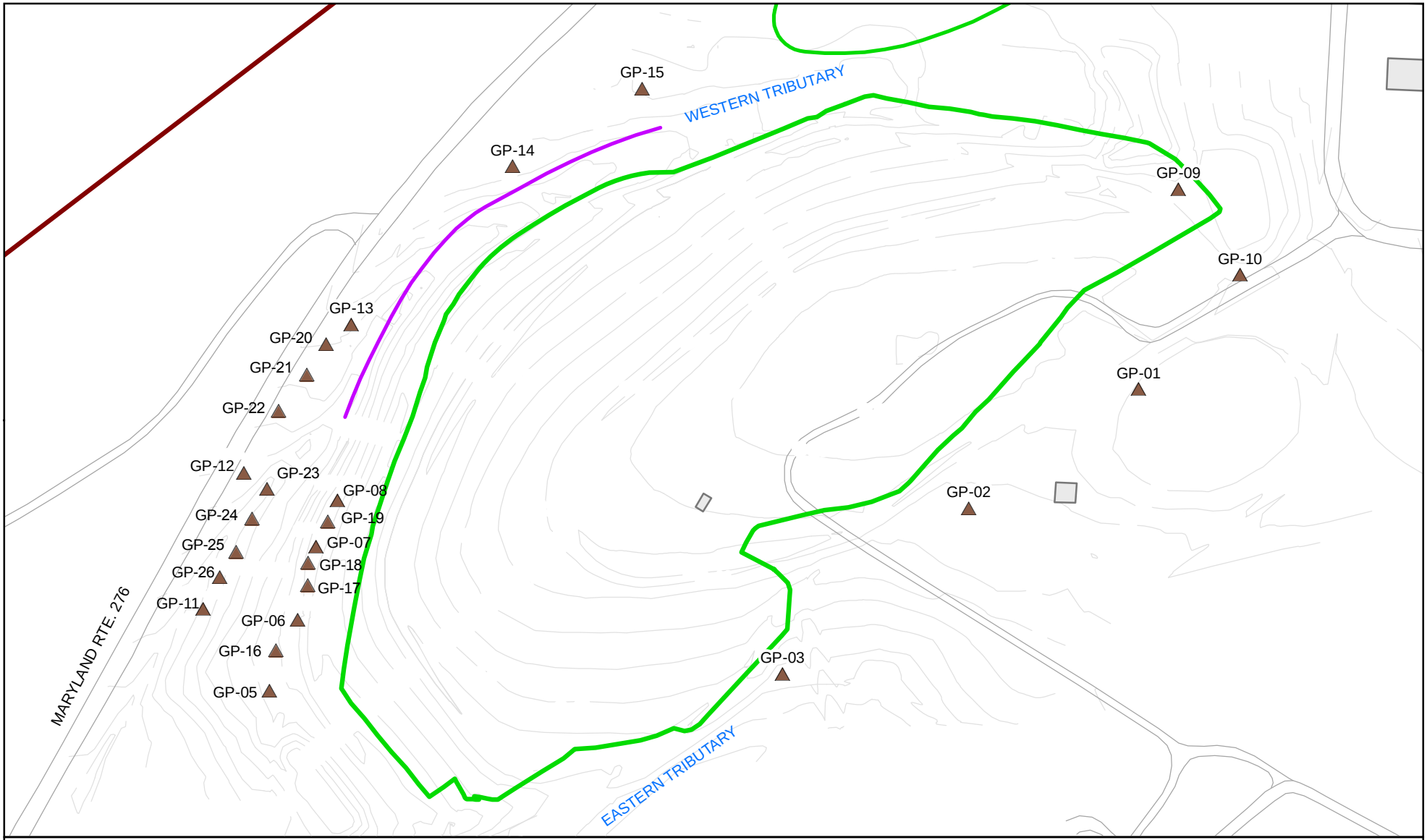
Installation Area

N
W E
S

0 1,500 3,000
Feet

Figure 1
Facility Location Map
Former Naval Training Center: Bainbridge
Port Deposit, Maryland

H&S



Legend

- Gas Probe Location
- Culvert Inlet
- Culvert Outlet
- Drain
- Outfall
- Elevation Contour Line (5 ft Interval)
- Rip-Rap Channel
- Existing Structure
- Installation Area
- Landfill Area

N
W E
S

0 100 200
Feet

Figure 2
Methane Monitoring Locations
Former Naval Training Center: Bainbridge
Port Deposit, Maryland

H&S

FIGURE 3
Methane Concentration Graph
Bainbridge Old Base Landfill
Port Deposit, Maryland

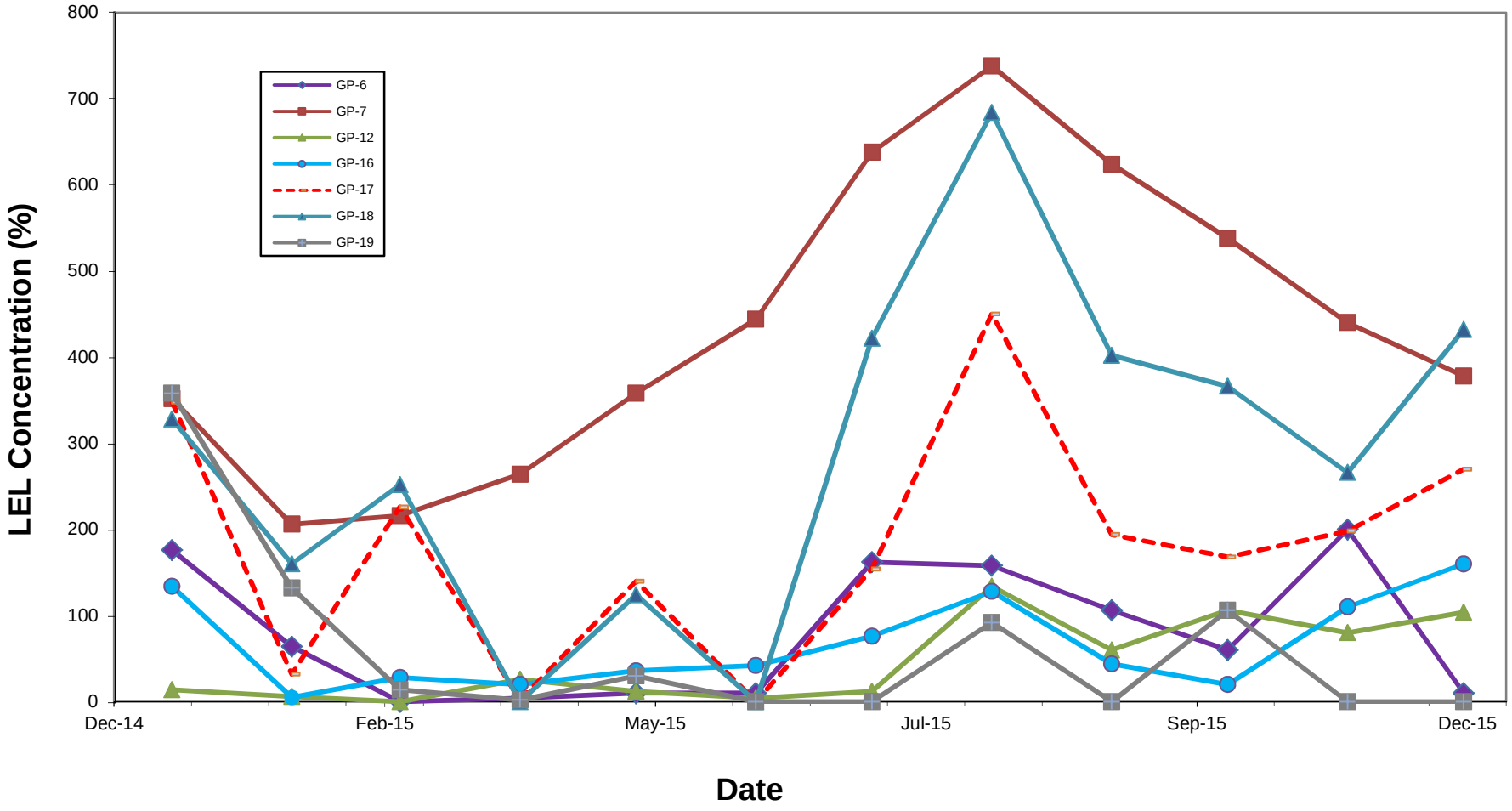
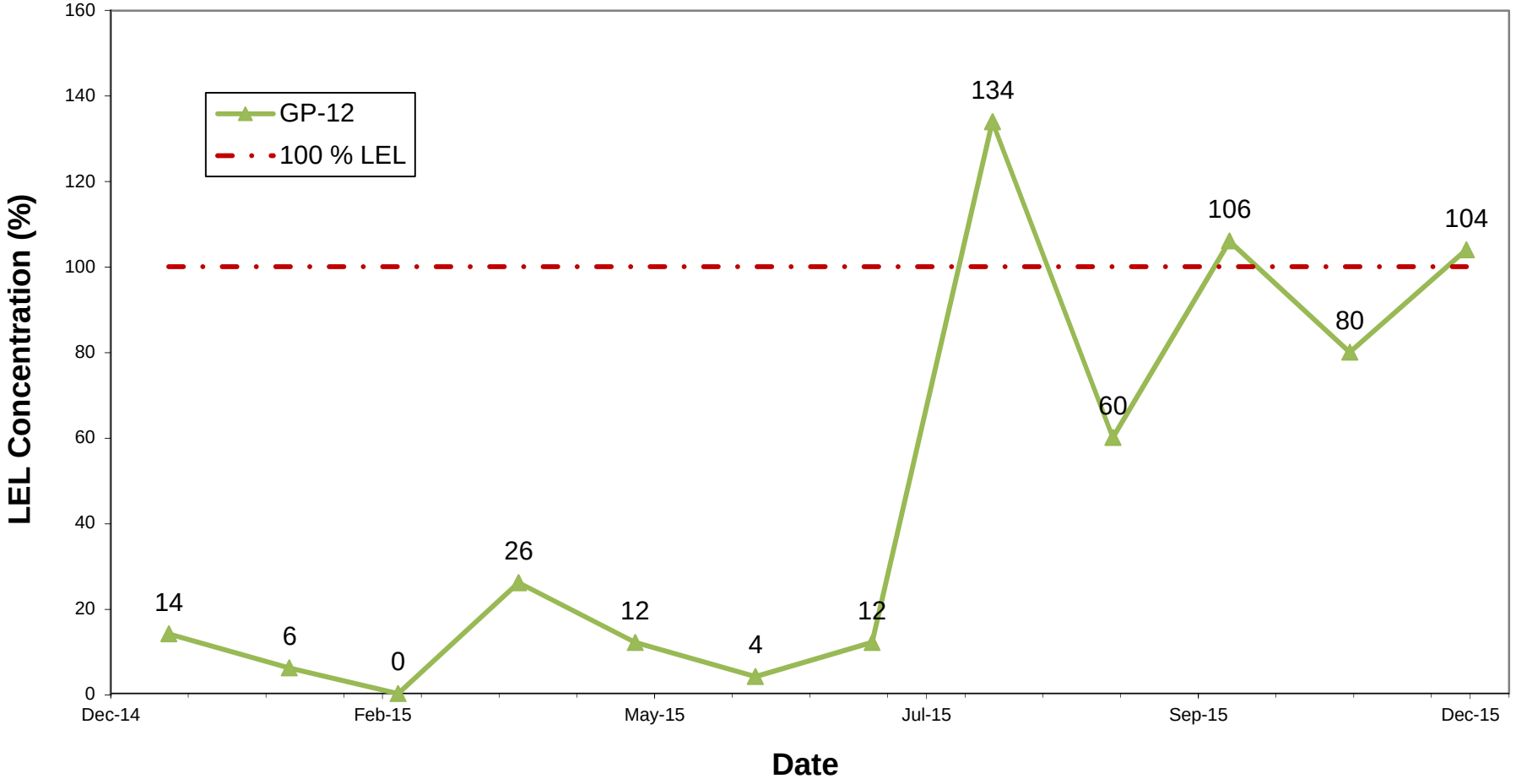


FIGURE 4
Methane Concentration at GP-12
Bainbridge Old Base Landfill
Port Deposit, Maryland



TABLES

Table 1

Methane Monitoring Data
Former Naval Training Center Bainbridge
Port Deposit, Maryland

	Methane Results % LEL											
Gas Probe ID	**Jan-15**	**Feb-15**	**Mar-15**	**Apr-15**	**May-15**	**Jun-15**	**Jul-15**	**Aug-15**	**Sep-15**	**Oct-15**	**Nov-15**	**Dec-15**
GP-1	0	0	0	0	0	0	0	0	0	0	0	0
GP-2	0	0	0	0	0	0	0	0	0	0	0	0
GP-3	0	0	0	0	0	0	0	0	0	0	0	0
GP-4	0	0	0	0	0	0	0	0	0	0	0	0
GP-5	0	0	0	0	0	0	0	0	0	0	0	0
GP-6	**176**	**64**	0	**4**	**10**	**10**	**162**	**158**	**106**	**60**	**200**	**10**
GP-7	**352**	**206**	**216**	**264**	**358**	**444**	**638**	**738**	**624**	**538**	**440**	**378**
GP-8	0	0	0	0	0	0	0	0	0	0	0	0
GP-9	0	0	0	0	0	0	0	0	0	0	0	0
GP-10	0	0	0	0	0	0	0	0	0	0	0	0
GP-11	0	0	0	0	0	0	0	0	0	0	0	0
GP-12	**14**	**6**	0	**26**	**12**	**4**	**12**	**134**	**60**	**106**	**80**	**104**
GP-13	0	0	0	0	0	0	0	0	0	0	0	0
GP-14	0	0	0	0	0	0	0	0	0	0	0	0
GP-15	0	0	0	0	0	0	0	0	0	0	0	0
GP-16	**134**	**5**	**28**	**20**	**36**	**42**	**76**	**128**	**44**	**20**	**110**	**160**
GP-17	**348**	**32**	**226**	2	**140**	0	**154**	**450**	**194**	**168**	**198**	**270**
GP-18	**328**	**160**	**252**	0	**124**	0	**422**	**684**	**402**	**366**	**266**	**432**
GP-19	**358**	**132**	**14**	**2**	**30**	0	0	**92**	0	**106**	0	0
GP-20	0	0	0	0	0	0	0	0	0	0	0	0
GP-21	0	0	0	0	0	0	0	0	0	0	NC	0
GP-22	**18**	**26**	**6**	0	0	0	0	0	0	0	0	0
GP-23	0	0	0	0	0	0	0	0	0	0	0	0
GP-24	0	0	0	0	0	0	0	0	0	0	0	0
GP-25	0	0	0	0	0	0	0	0	0	0	0	0
GP-26	0	0	0	0	0	0	0	0	0	0	0	0

Notes:

NC = Data not collected due to significant water present in gas probe
%LEL = Percent of Lower Explosive Limit
Yellow Highlights = Greater than or equal to 100% LEL

APPENDIX A
MONTHLY METHANE MONITORING LOGSHEETS

Methane Monitoring Results
January 2015
Site 1 - Old Base Landfill Former NTC Bainbridge, Port Deposit, Maryland

Date: January 15, 2015 **Weather:** Sunny, 34°F

Personnel: (b) (4) **Barometric Pressure (inches Hg):** 30.09

Relative Humidity (%) App 60%

Start Time: 1315 **Finish Time:** 1650

Instrument: LandTec GEM-2000 **Serial Number:** GM10403/07 **Calibrated (Y/N):** Yes

Sampling Location	Measurement at Indicated Gas Probe					
	CH_4 %	CO_2 %	O_2 %	Balance %	LEL [1] %	Notes / Observations
GP-1	0.0	6.0	14.2	79.8	0%	Unlocked/sample port closed
GP-2	0.0	11.1	7.2	81.7	0%	Unlocked/sample port closed
GP-3	0.0	8.1	13.1	78.8	0%	Unlocked/sample port closed
GP-4	0.0	4.5	16.7	78.8	0%	Unlocked/sample port closed
GP-5	0.0	10.2	5.2	84.6	0%	Unlocked/sample port closed
GP-6	**8.8**	14.8	0.2	76.2	**176%**	Unlocked/sample port closed
GP-7	**17.6**	13.6	0.3	68.4	**352%**	Unlocked/sample port closed
GP-8	0.0	0.1	18.8	81.1	0%	Unlocked/sample port closed
GP-9	0.0	1.0	15.4	83.6	0%	Unlocked/sample port closed
GP-10	0.0	8.0	9.0	82.8	0%	Unlocked/sample port closed
GP-11	0.0	0.3	21.5	78.2	0%	Unlocked/sample port open
GP-12	**0.7**	2.7	20.1	76.5	**14%**	Unlocked/sample port closed
GP-13	0.0	3.9	17.1	79.0	0%	Unlocked/sample port closed
GP-14	0.0	1.1	19.8	79.0	0%	Locked/sample port closed
GP-15	0.0	6.9	14.5	78.7	0%	Unlocked/sample port closed
GP-16	**6.7**	13.7	0.5	79.2	**134%**	Unlocked/sample port open
GP-17	**17.4**	13.6	2.4	66.9	**348%**	Unlocked/sample port open
GP-18	**16.4**	17.2	0.3	66.2	**328%**	Unlocked/sample port open
GP-19	**17.9**	13.5	5.1	63.5	**358%**	Unlocked/sample port open
GP-20	0.0	0.2	21.4	78.4	0%	Unlocked/sample port open
GP-21	0.0	1.0	18.6	80.4	0%	Unlocked/sample port open
GP-22	**0.9**	5.4	0.5	93.2	**18%**	Unlocked/sample port open
GP-23	0.0	0.6	21.0	78.3	0%	Unlocked/sample port open
GP-24	0.0	1.1	20.7	78.2	0%	Unlocked/sample port open
GP-25	0.0	1.9	19.8	78.3	0%	Unlocked/sample port open
GP-26	0.0	1.4	21.1	77.6	0%	Unlocked/sample port open

NOTES:
GP - Gas probe location

Methane Monitoring Results
February 2015
Site 1 - Old Base Landfill Former NTC Bainbridge, Port Deposit, Maryland

Date: 2/26/2015 **Weather:** Overcast, 25°F

Personnel: (b) (4) **Barometric Pressure (inches Hg):** 29.52

Relative Humidity (%) NA

Start Time: 0930 **Finish Time:** 1600

Instrument: LandTec GEM-2000 **Serial Number:** GM07542 **Calibrated (Y/N):** Yes

Sampling Location	Measurement at Indicated Gas Probe					
	CH_4 %	CO_2 %	O_2 %	Balance %	LEL [(1)] %	Notes / Observations
GP-1	0.0	0.8	21.1	78.0	0%	Unlocked/sample port closed
GP-2	0.0	0.3	21.8	77.0	0%	Unlocked/sample port closed
GP-3	0.0	7.2	15.3	77.3	0%	Unlocked/sample port closed
GP-4	0.0	4.0	19.7	76.2	0%	Unlocked/sample port closed
GP-5	0.0	9.9	7.4	82.5	0%	Unlocked/sample port closed
GP-6	**3.2**	13.8	2.4	80.5	**64%**	Unlocked/sample port closed
GP-7	**10.3**	11.3	3.6	74.6	**206%**	Unlocked/sample port closed
GP-8	0.0	0.8	17.7	81.4	0%	Unlocked/sample port closed
GP-9	0.0	1.4	16.1	82.1	0%	Unlocked/sample port closed
GP-10	0.0	3.7	17.2	78.9	0%	Unlocked/sample port closed
GP-11	0.0	0.3	21.6	78.1	0%	Unlocked/sample port closed
GP-12	**0.3**	0.5	21.1	78.0	**6%**	Unlocked/sample port open. Drew water while sampling.
GP-13	0.0	2.7	19.0	78.1	0%	Unlocked/sample port closed
GP-14	0.0	0.0	21.6	78.3	0%	Unlocked/sample port closed
GP-15	0.0	3.7	18.2	78.0	0%	Unlocked/sample port closed
GP-16	**0.3**	8.4	8.0	82.6	**5%**	Unlocked/sample port open
GP-17	**1.6**	1.6	19.1	77.4	**32%**	Unlocked/sample port open
GP-18	**8.0**	9.4	6.9	75.1	**160%**	Unlocked/sample port open
GP-19	**6.6**	6.5	12.9	73.6	**132%**	Unlocked/sample port open
GP-20	0.0	2.5	19.0	78.4	0%	Unlocked/sample port open/water in casing
GP-21	0.0	3.2	12.5	84.4	0%	Unlocked
GP-22	**1.3**	4.3	0.0	94.3	**26%**	Unlocked/sample port closed
GP-23	0.0	0.4	21.4	78.1	0%	Unlocked/sample port closed
GP-24	0.0	1.1	20.4	78.4	0%	Unlocked/sample port closed
GP-25	0.0	1.9	18.2	79.9	0%	Unlocked/sample port closed
GP-26	0.0	0.9	21.2	77.9	0%	Unlocked/sample port closed

NOTES:
GP - Gas probe location
(1) - Percent Lower Explosive Limit (LEL) calculated based on % methane recorded and assuming an LEL for methane of 50,000 ppmv (5%)
Bold indicates methane detection. Shading indicates methane detection >100%LEL

Methane Monitoring Results
March 2015
Site 1 - Old Base Landfill Former NTC Bainbridge, Port Deposit, Maryland

Date: March 17, 2015 **Weather:** Overcast, 50°F

Personnel: (b) (4) **Barometric Pressure (inches Hg):** 29.18

Relative Humidity (%) NA

Start Time: 0745 **Finish Time:** 1115

Instrument: LandTec GEM-2000 **Serial Number:** GM07542 **Calibrated (Y/N):** Yes

Sampling Location	Measurement at Indicated Gas Probe					
	CH_4 %	CO_2 %	O_2 %	Balance %	LEL [(1)] %	Notes / Observations
GP-1	0.0	3.6	15.8	80.5	0%	Unlocked/sample port closed
GP-2	0.0	10.0	7.1	82.1	0%	Unlocked/sample port closed
GP-3	0.0	6.8	14.2	79.0	0%	Unlocked/sample port closed
GP-4	0.0	3.6	18.6	77.7	0%	Unlocked/sample port closed
GP-5	0.0	3.2	8.6	88.0	0%	Unlocked/sample port closed
GP-6	0.0	1.5	13.0	85.3	0%	Unlocked/sample port closed
GP-7	**10.8**	11.5	1.7	75.7	**216%**	Unlocked/sample port closed
GP-8	0.0	0.1	9.5	90.3	0%	Unlocked/sample port closed
GP-9	0.0	0.3	17.8	81.9	0%	Unlocked/sample port closed
GP-10	0.0	5.9	11.0	83.0	0%	Unlocked/sample port closed
GP-11	0.0	0.1	20.9	78.9	0%	Unlocked/sample port closed
GP-12	0.0	0.7	20.8	78.5	0%	Unlocked/sample port open. Drew water while sampling.
GP-13	0.0	2.5	16.8	80.7	0%	Unlocked/sample port closed
GP-14	0.0	0.3	20.7	78.8	0%	Unlocked/sample port closed
GP-15	0.0	4.4	16.5	79.2	0%	Unlocked/sample port closed
GP-16	**1.4**	3.8	11.7	83.0	**28%**	Unlocked/sample port open
GP-17	**11.3**	9.9	5.8	73.5	**226%**	Unlocked/sample port closed
GP-18	**12.6**	14.6	0.8	73.8	**252%**	Unlocked/sample port closed
GP-19	**0.7**	0.6	19.5	79.2	**14%**	Unlocked/sample port closed
GP-20	0.0	3.8	16.9	79.3	0%	Unlocked/sample port closed
GP-21	0.0	0.7	17.8	81.3	0%	Unlocked/sample port closed
GP-22	**0.3**	2.1	0.0	97.5	**6%**	Unlocked/sample port closed
GP-23	0.0	0.5	20.2	79.1	0%	Unlocked/sample port open
GP-24	0.0	1.2	19.8	78.9	0%	Unlocked/sample port open
GP-25	0.0	0.9	18.7	80.3	0%	Unlocked/sample port open
GP-26	0.0	0.0	20.9	79.0	0%	Unlocked/sample port open

NOTES:
GP - Gas probe location
(1) - Percent Lower Explosive Limit (LEL) calculated based on % methane recorded and assuming an LEL for methane of 50,000 ppmv (5%)
Bold indicates methane detection. Shading indicates methane detection >100%LEL

Methane Monitoring Results
April 2015
Site 1 - Old Base Landfill Former NTC Bainbridge, Port Deposit, Maryland

Date: April 28, 2015 **Weather:** Sunny, 50°F

Personnel: (b) (4) **Barometric Pressure (inches Hg):** 29.88

Relative Humidity (%) 63

Start Time: 0800 **Finish Time:** 1130

Instrument: LandTec GEM-2000 **Serial Number:** 12267110 **Calibrated (Y/N):** Yes

Sampling Location	Measurement at Indicated Gas Probe					
	CH_4 %	CO_2 %	O_2 %	Balance %	LEL [(1)] %	Notes / Observations
GP-1	0.0	1.6	18.5	79.8	0%	Unlocked/sample port closed
GP-2	0.0	0.1	20.4	79.5	0%	Unlocked/sample port closed
GP-3	0.0	6.2	14.6	79.2	0%	Unlocked/sample port closed
GP-4	0.0	2.7	18.7	78.6	0%	Unlocked/sample port closed
GP-5	0.0	5.6	11.0	83.4	0%	Unlocked/sample port closed
GP-6	**0.2**	6.7	6.0	87.1	**4%**	Unlocked/sample port closed
GP-7	**13.2**	9.3	5.3	72.3	**264%**	Unlocked/sample port closed
GP-8	0.0	0.6	6.9	92.5	0%	Unlocked/sample port closed
GP-9	0.0	2.0	11.7	86.3	0%	Unlocked/sample port closed
GP-10	0.0	5.6	9.9	84.5	0%	Unlocked/sample port closed
GP-11	0.0	3.0	16.7	80.3	0%	Unlocked/sample port closed
GP-12	**1.3**	1.7	17.7	79.3	**26%**	Unlocked/sample port closed. Pumped water from probe prior to sampling.
GP-13	0.0	4.4	13.4	82.2	0%	Unlocked/sample port closed
GP-14	0.0	0.0	20.1	79.9	0%	Unlocked/sample port closed
GP-15	0.0	4.0	16.8	79.4	0%	Unlocked/sample port closed
GP-16	**1.0**	6.7	11.6	80.4	**20%**	Unlocked/sample port open
GP-17	**0.1**	0.1	19.8	80.0	**2%**	Unlocked/sample port closed
GP-18	0.0	0.0	20.0	80.0	0%	Unlocked/sample port closed
GP-19	**0.1**	1.3	16.4	82.2	**2%**	Unlocked/sample port closed
GP-20	0.0	0.1	20.1	79.8	0%	Unlocked/sample port open
GP-21	0.0	2.4	16.4	81.2	0%	Unlocked/sample port open
GP-22	0.0	3.8	7.8	88.4	0%	Unlocked/sample port closed
GP-23	0.0	1.5	18.2	80.3	0%	Unlocked
GP-24	0.0	2.7	17.5	79.8	0%	Unlocked/sample port open
GP-25	0.0	1.9	17.4	80.7	0%	Unlocked/sample port open
GP-26	0.0	0.7	19.8	79.6	0%	Unlocked/sample port closed.

NOTES:
GP - Gas probe location
(1) - Percent Lower Explosive Limit (LEL) calculated based on % methane recorded and assuming an LEL for methane of 50,000 ppmv (5%)
Bold indicates methane detection. Shading indicates methane detection >100%LEL

Methane Monitoring Results
May 2015
Site 1 - Old Base Landfill Former NTC Bainbridge, Port Deposit, Maryland

Date: May 26, 2015 **Weather:** Sunny, 70°F

Personnel: (b) (4) **Barometric Pressure (inches Hg):** 30.21

Relative Humidity (%) 90

Start Time: 0730 **Finish Time:** 1230

Instrument: LandTec GEM-2000 **Serial Number:** 12807/10 **Calibrated (Y/N):** Yes

Sampling Location	Measurement at Indicated Gas Probe					
	CH_4 %	CO_2 %	O_2 %	Balance %	LEL [(1)] %	Notes / Observations
GP-1	0.0	2.8	17.1	80.2	0%	Locked/sample port closed
GP-2	0.0	2.6	17.1	80.4	0%	Locked/sample port closed
GP-3	0.0	6.3	14.4	79.3	0%	Locked/sample port closed
GP-4	0.0	2.6	17.7	79.7	0%	Locked/sample port closed
GP-5	0.0	6.6	11.9	81.5	0%	Locked/sample port closed
GP-6	**0.5**	11.8	5.4	82.2	**10%**	Locked/sample port closed
GP-7	**17.9**	12.5	3.2	66.3	**358%**	Locked/sample port closed
GP-8	0.0	2.3	14.9	82.8	0%	Locked/sample port closed
GP-9	0.0	5.1	11.1	83.8	0%	Locked/sample port closed
GP-10	0.0	6.1	9.6	84.3	0%	Locked/sample port closed
GP-11	0.0	5.8	13.0	81.1	0%	Locked/sample port closed
GP-12	**0.6**	0.9	19.0	79.6	**12%**	Flush mount/sample port closed. Pumped water from probe prior to sampling.
GP-13	0.0	6.3	10.3	83.4	0%	Flush mount/sample port closed
GP-14	0.0	0.0	19.4	80.6	0%	Locked/sample port closed
GP-15	0.0	2.9	17.3	79.9	0%	Locked/sample port closed
GP-16	**1.8**	8.6	9.0	80.3	**36%**	Locked/sample port open
GP-17	**7.0**	6.5	11.3	75.0	**140%**	Locked/sample port closed
GP-18	**6.2**	7.1	13.0	73.8	**124%**	Locked/sample port closed
GP-19	**1.5**	10.5	4.9	82.9	**30%**	Locked/sample port closed
GP-20	0.0	5.9	14.6	79.5	0%	Flush mount/sample port closed
GP-21	0.0	4.8	13.2	82.0	0%	Flush mount/sample port closed
GP-22	0.0	4.1	12.9	83.0	0%	Flush mount/sample port closed
GP-23	0.0	1.7	18.4	79.9	0%	Locked/sample port closed
GP-24	0.0	3.2	17.6	79.2	0%	Locked/sample port closed
GP-25	0.0	4.4	14.6	80.9	0%	Locked/sample port closed
GP-26	0.0	0.2	19.9	79.9	0%	Locked/sample port closed

NOTES:
GP - Gas probe location
(1) - Percent Lower Explosive Limit (LEL) calculated based on % methane recorded and assuming an LEL for methane of 50,000 ppmv (5%)
Bold indicates methane detection. Shading indicates methane detection >100%LEL

Methane Monitoring Results
June 2015
Site 1 - Old Base Landfill Former NTC Bainbridge, Port Deposit, Maryland

Date: June 29, 2015 **Weather:** Sunny, 62°F

Personnel: (b) (4) **Barometric Pressure (inches Hg):** 29.96

Relative Humidity (%) 78

Start Time: 0745 **Finish Time:** 1145

Instrument: LandTec GEM-2000 **Serial Number:** 17158 **Calibrated (Y/N):** Yes

Sampling Location	Measurement at Indicated Gas Probe					
	CH_4 %	CO_2 %	O_2 %	Balance %	LEL [(1)] %	Notes / Observations
GP-1	0.0	2.1	17.8	80.0	0%	Locked/sample port closed
GP-2	0.0	0.3	20.4	79.3	0%	Locked/sample port closed
GP-3	0.0	9.0	10.3	80.7	0%	Locked/sample port closed
GP-4	0.0	7.1	13.1	79.8	0%	Locked/sample port closed
GP-5	0.0	6.3	8.6	85.1	0%	Locked/sample port closed
GP-6	**0.5**	2.7	11.9	84.8	**10%**	Locked/sample port closed
GP-7	**22.2**	12.3	4.6	60.7	**444%**	Locked/sample port closed
GP-8	0.0	0.8	2.7	96.5	0%	Locked/sample port closed
GP-9	0.0	2.4	8.6	89.0	0%	Locked/sample port closed
GP-10	0.0	9.5	3.6	86.9	0%	Locked/sample port closed
GP-11	0.0	11.0	5.6	83.3	0%	Locked/sample port closed
GP-12	**0.2**	0.8	21.1	77.8	**4%**	Flush mount/sample port open. Pumped water from probe prior to sampling (0.25 gpm sustained).
GP-13	0.0	6.1	7.6	86.3	0%	Flush mount/sample port closed
GP-14	0.0	0.3	20.0	79.7	0%	Locked/sample port closed
GP-15	0.0	4.5	15.1	80.5	0%	Locked/sample port closed
GP-16	**2.1**	9.6	8.2	80.0	**42%**	Locked/sample port open
GP-17	0.0	0.3	20.0	79.8	0%	Locked/sample port closed
GP-18	0.0	0.2	20.0	79.8	0%	Locked/sample port closed
GP-19	0.0	0.1	19.8	80.1	0%	Locked/sample port closed
GP-20	0.0	6.5	9.8	83.7	0%	Flush mount/sample port closed
GP-21	0.0	2.5	13.0	84.5	0%	Flush mount/sample port closed
GP-22	0.0	3.4	9.2	87.4	0%	Flush mount/sample port closed
GP-23	0.0	3.6	15.3	81.0	0%	Locked/sample port closed
GP-24	0.0	7.4	10.3	82.1	0%	Locked/sample port closed
GP-25	0.0	5.6	9.5	84.8	0%	Locked/sample port closed
GP-26	0.0	1.6	18.6	79.8	0%	Locked/sample port closed

NOTES:
GP - Gas probe location
(1) - Percent Lower Explosive Limit (LEL) calculated based on % methane recorded and assuming an LEL for methane of 50,000 ppmv (5%)
Bold indicates methane detection. Shading indicates methane detection >100%LEL

Methane Monitoring Results
July 2015
Site 1 - Old Base Landfill Former NTC Bainbridge, Port Deposit, Maryland

Date: July 28, 2015
Personnel: (b) (4)
Start Time: 0740
Weather: Sunny, 75-90°F
Barometric Pressure (inches Hg): 30.04
Relative Humidity (%) 90
Finish Time: 1200

Instrument: LandTec GEM-2000 **Serial Number:** 17158 **Calibrated (Y/N):** Yes

Sampling Location	Measurement at Indicated Gas Probe					
	CH_4 %	CO_2 %	O_2 %	Balance %	LEL [(1)] %	Notes / Observations
GP-1	0.0	2.3	17.4	80.3	0%	Locked/sample port closed
GP-2	0.0	2.8	16.7	80.5	0%	Locked/sample port closed
GP-3	0.0	10.3	8.7	81.1	0%	Locked/sample port closed
GP-4	0.0	7.4	14.0	78.6	0%	Locked/sample port closed
GP-5	0.0	9.5	9.4	81.0	0%	Locked/sample port closed
GP-6	**8.1**	16.0	1.0	74.8	**162%**	Locked/sample port closed
GP-7	**31.9**	15.1	0.9	51.7	**638%**	Locked/sample port closed
GP-8	0.0	4.8	6.9	88.3	0%	Locked/sample port closed
GP-9	0.0	8.7	9.3	82.0	0%	Locked/sample port closed
GP-10	0.0	10.0	6.2	83.7	0%	Locked/sample port closed
GP-11	0.0	9.1	9.5	81.4	0%	Locked/sample port closed
GP-12	**0.6**	2.4	18.6	78.4	**12%**	Flush mount/sample port open. Pumped water from probe prior to sampling (0.5 gpm sustained).
GP-13	0.0	9.2	3.3	87.5	0%	Flush mount/sample port closed
GP-14	0.0	0.8	18.9	80.3	0%	Locked/sample port closed
GP-15	0.0	5.0	14.3	80.8	0%	Locked/sample port closed
GP-16	**3.8**	15.5	1.2	79.4	**76%**	Locked/sample port open
GP-17	**7.7**	5.8	12.3	74.0	**154%**	Locked/sample port closed
GP-18	**21.1**	16.8	2.1	59.5	**422%**	Locked/sample port closed
GP-19	0.0	1.6	17.6	80.8	0%	Locked/sample port closed
GP-20	0.0	8.8	7.6	83.6	0%	Flush mount/sample port closed
GP-21	0.0	5.4	11.7	82.9	0%	Flush mount/sample port closed
GP-22	0.0	5.3	13.7	81.0	0%	Flush mount/sample port closed
GP-23	0.0	2.5	17.2	80.3	0%	Locked/sample port closed
GP-24	0.0	4.3	16.0	79.6	0%	Locked/sample port closed
GP-25	0.0	7.6	8.3	84.2	0%	Locked/sample port closed
GP-26	0.0	3.0	16.8	80.3	0%	Locked/sample port closed

NOTES:
GP - Gas probe location
(1) - Percent Lower Explosive Limit (LEL) calculated based on % methane recorded and assuming an LEL for methane of 50,000 ppmv (5%)
Bold indicates methane detection. Shading indicates methane detection >100%LEL

Methane Monitoring Results
August 2015
Site 1 - Old Base Landfill Former NTC Bainbridge, Port Deposit, Maryland

Date: August 24, 2015 **Weather:** Sunny, 69-90°F

Personnel: (b) (4) **Barometric Pressure (inches Hg):** 29.92

Relative Humidity (%) 76

Start Time: 0800 **Finish Time:** 1240

Instrument: LandTec GEM-2000 **Serial Number:** R7160 **Calibrated (Y/N):** Yes

Sampling Location	Measurement at Indicated Gas Probe					
	CH_4 %	CO_2 %	O_2 %	Balance %	LEL [(1)] %	Notes / Observations
GP-1	0.0	4.4	16.2	79.3	0%	Locked/sample port closed
GP-2	0.0	7.0	12.3	80.6	0%	Locked/sample port closed
GP-3	0.0	10.1	10.4	79.4	0%	Locked/sample port closed
GP-4	0.0	5.7	15.6	78.7	0%	Locked/sample port closed
GP-5	0.0	11.4	8.0	80.5	0%	Locked/sample port closed
GP-6	**7.9**	17.0	1.2	73.9	**158%**	Locked/sample port closed
GP-7	**36.9**	18.4	0.6	44.0	**738%**	Locked/sample port closed
GP-8	0.0	4.2	12.8	82.8	0%	Locked/sample port closed
GP-9	0.0	10.4	7.5	82.0	0%	Locked/sample port closed
GP-10	0.0	10.3	9.5	80.1	0%	Locked/sample port closed
GP-11	0.0	5.8	14.7	79.3	0%	Locked/sample port open
GP-12	**6.7**	5.1	13.4	74.7	**134%**	Flush mount/sample port closed. Pumped water from probe prior to sampling (0.25 gpm on average).
GP-13	0.0	9.5	3.4	87.0	0%	Flush mount/sample port closed
GP-14	0.0	1.0	19.5	79.5	0%	Locked/sample port closed
GP-15	0.0	7.0	12.4	80.5	0%	Locked/sample port closed
GP-16	**6.4**	16.5	1.1	75.6	**128%**	Locked/sample port open
GP-17	**22.5**	12.9	4.8	59.7	**450%**	Locked/sample port closed
GP-18	**34.2**	20.2	0.3	45.2	**684%**	Locked/sample port closed
GP-19	**4.6**	6.6	11.0	77.7	**92%**	Locked/sample port closed
GP-20	0.0	9.3	7.6	83.1	0%	Flush mount/sample port closed
GP-21	0.0	5.4	14.8	79.8	0%	Flush mount/sample port open
GP-22	0.0	4.5	14.6	80.8	0%	Flush mount/sample port closed
GP-23	0.0	3.9	17.6	78.4	0%	Locked/sample port closed
GP-24	0.0	4.7	17.0	78.3	0%	Locked/sample port closed
GP-25	0.0	6.6	13.9	79.4	0%	Locked/sample port closed
GP-26	0.0	4.7	16.0	79.3	0%	Locked/sample port closed

NOTES:
GP - Gas probe location
(1) - Percent Lower Explosive Limit (LEL) calculated based on % methane recorded and assuming an LEL for methane of 50,000 ppmv (5%)
Bold indicates methane detection. Shading indicates methane detection >100%LEL

Methane Monitoring Results
September 2015
Site 1 - Old Base Landfill Former NTC Bainbridge, Port Deposit, Maryland

Date: September 22, 2015 **Weather:** Overcast, 60°F

Personnel: (b) (4) **Barometric Pressure (inches Hg):** 30.25

Relative Humidity (%) 78

Start Time: 0815 **Finish Time:** 1210

Instrument: LandTec GEM-2000 **Serial Number:** R7160 **Calibrated (Y/N):** Yes

Sampling Location	Measurement at Indicated Gas Probe					
	CH_4 %	CO_2 %	O_2 %	Balance %	LEL [(1)] %	Notes / Observations
GP-1	0.0	3.6	17.6	78.7	0%	Locked/sample port closed
GP-2	0.0	4.7	15.2	80.0	0%	Locked/sample port closed
GP-3	0.0	8.7	12.3	79.0	0%	Locked/sample port closed
GP-4	0.0	4.9	16.8	78.3	0%	Locked/sample port closed
GP-5	0.0	10.1	9.4	80.3	0%	Locked/sample port closed
GP-6	**5.3**	15.8	1.7	77.1	**106%**	Locked/sample port closed
GP-7	**31.2**	17.7	1.5	49.5	**624%**	Locked/sample port closed
GP-8	0.0	3.2	10.0	86.7	0%	Locked/sample port closed
GP-9	0.0	8.1	11.9	80.0	0%	Locked/sample port closed
GP-10	0.0	7.5	13.6	78.8	0%	Locked/sample port closed
GP-11	0.0	5.8	15.3	78.8	0%	Locked/sample port closed
GP-12	**3.0**	4.2	16.5	76.3	**60%**	Flush mount/sample port closed. Pumped water from probe prior to sampling (pumped dry twice).
GP-13	0.0	10.4	3.3	86.3	0%	Flush mount/sample port closed
GP-14	0.0	0.2	20.5	79.1	0%	Locked/sample port closed
GP-15	0.0	7.4	13.0	79.5	0%	Locked/sample port closed
GP-16	**2.2**	13.0	14.0	80.5	**44%**	Locked/sample port open
GP-17	**9.7**	8.4	10.2	71.6	**194%**	Locked/sample port closed
GP-18	**20.1**	14.4	5.1	59.9	**402%**	Locked/sample port closed
GP-19	0.0	4.1	16.1	79.8	0%	Locked/sample port closed
GP-20	0.0	9.0	8.8	82.1	0%	Flush mount/sample port closed
GP-21	0.0	4.5	15.9	79.5	0%	Flush mount/sample port closed
GP-22	0.0	4.9	14.0	81.1	0%	Flush mount/sample port closed
GP-23	0.0	0.6	20.2	79.0	0%	Locked/sample port open
GP-24	0.0	3.6	18.5	77.8	0%	Locked/sample port closed
GP-25	0.0	5.6	16.7	75.6	0%	Locked/sample port closed
GP-26	0.0	3.7	18.0	78.1	0%	Locked/sample port open

NOTES:
GP - Gas probe location
(1) - Percent Lower Explosive Limit (LEL) calculated based on % methane recorded and assuming an LEL for methane of 50,000 ppmv (5%)
Bold indicates methane detection. Shading indicates methane detection >100%LEL

Methane Monitoring Results
October 2015
Site 1 - Old Base Landfill Former NTC Bainbridge, Port Deposit, Maryland

Date: October 27, 2015
Personnel: (b) (4)
Start Time: 0735
Weather: Clear, 35°F
Barometric Pressure (inches Hg): 30.22
Relative Humidity (%) Not recorded
Finish Time: 1145

Instrument: LandTec GEM-2000 **Serial Number:** R11180 **Calibrated (Y/N):** Yes

Sampling Location	Measurement at Indicated Gas Probe					
	CH_4 %	CO_2 %	O_2 %	Balance %	LEL [(1)] %	Notes / Observations
GP-1	0.0	2.4	19.1	78.6	0%	Locked/sample port closed
GP-2	0.0	1.7	19.5	78.8	0%	Locked/sample port closed
GP-3	0.0	9.2	13.8	77.0	0%	Locked/sample port closed
GP-4	0.0	4.2	18.3	77.5	0%	Locked/sample port closed
GP-5	0.0	11.4	9.9	78.7	0%	Locked/sample port closed
GP-6	**3.0**	16.1	2.9	78.0	**60%**	Locked/sample port closed
GP-7	**26.9**	19.9	0.3	52.9	**538%**	Locked/sample port closed
GP-8	0.0	1.7	10.5	87.8	0%	Locked/sample port closed
GP-9	0.0	7.3	14.0	78.7	0%	Locked/sample port closed
GP-10	0.0	6.3	16.6	77.1	0%	Locked/sample port closed
GP-11	0.0	4.5	18.3	77.2	0%	Locked/sample port closed
GP-12	**5.3**	4.9	15.0	74.8	**106%**	Flush mount/sample port closed. Pumped water from probe prior to sampling.
GP-13	0.0	9.8	9.2	81.0	0%	Flush mount/sample port closed
GP-14	0.0	12.6	7.7	79.7	0%	Locked/sample port closed
GP-15	0.0	9.3	12.7	78.0	0%	Locked/sample port closed
GP-16	**1.0**	12.0	7.0	79.9	**20%**	Locked/sample port open
GP-17	**8.4**	9.3	10.9	70.9	**168%**	Locked/sample port closed
GP-18	**18.3**	15.2	5.6	60.8	**366%**	Locked/sample port closed
GP-19	**5.3**	8.5	13.0	73.2	**106%**	Locked/sample port closed
GP-20	0.0	9.2	8.7	82.1	0%	Flush mount/sample port closed
GP-21	0.0	2.9	18.5	78.6	0%	Flush mount/sample port closed
GP-22	0.0	8.7	5.0	86.4	0%	Flush mount/sample port closed
GP-23	0.0	2.0	19.9	78.1	0%	Locked/sample port closed
GP-24	0.0	2.5	19.6	77.9	0%	Locked/sample port closed
GP-25	0.0	4.2	18.9	76.9	0%	Locked/sample port closed
GP-26	0.0	4.7	18.0	77.4	0%	Locked/sample port open

NOTES:
GP - Gas probe location
(1) - Percent Lower Explosive Limit (LEL) calculated based on % methane recorded and assuming an LEL for methane of 50,000 ppmv (5%)
Bold indicates methane detection. Shading indicates methane detection >100%LEL

Methane Monitoring Results
November 2015
Site 1 - Old Base Landfill Former NTC Bainbridge, Port Deposit, Maryland

Date: November 20, 2015 **Weather:** Sunny, 42°F

Personnel: (b) (4) **Barometric Pressure (inches Hg):** 30.18

Relative Humidity (%) 56

Start Time: 0730 **Finish Time:** 1150

Instrument: LandTec GEM-2000 **Serial Number:** R11180 **Calibrated (Y/N):** Yes

Sampling Location	Measurement at Indicated Gas Probe					
	CH_4 %	CO_2 %	O_2 %	Balance %	LEL [(1)] %	Notes / Observations
GP-1	0.0	1.8	19.6	78.6	0%	Locked/sample port closed
GP-2	0.0	0.4	21.6	78.0	0%	Locked/sample port closed
GP-3	0.0	7.8	14.4	77.8	0%	Locked/sample port closed
GP-4	0.0	3.5	18.4	78.1	0%	Locked/sample port closed
GP-5	0.0	10.0	7.6	82.4	0%	Locked/sample port closed
GP-6	**10.0**	6.4	0.7	83.1	**200%**	Locked/sample port closed
GP-7	**22.0**	15.4	4.0	58.5	**440%**	Locked/sample port closed
GP-8	0.0	0.4	12.2	87.5	0%	Locked/sample port closed
GP-9	0.0	1.1	10.9	88.0	0%	Locked/sample port closed
GP-10	0.0	8.0	13.1	78.9	0%	Locked/sample port closed
GP-11	0.0	4.5	17.7	77.8	0%	Locked/sample port closed
GP-12	**4.0**	4.1	16.4	75.5	**80%**	Flush mount/sample port closed. Pumped water from probe twice prior to sampling.
GP-13	0.0	5.1	6.6	88.2	0%	Flush mount/sample port closed
GP-14	0.0	10.9	8.0	81.1	0%	Locked/sample port closed
GP-15	0.0	9.1	12.7	78.2	0%	Locked/sample port closed
GP-16	**5.5**	13.2	3.9	77.5	**110%**	Locked/sample port open
GP-17	**9.9**	3.4	13.1	73.7	**198%**	Locked/sample port closed
GP-18	**13.3**	5.4	8.7	72.3	**266%**	Locked/sample port closed
GP-19	0.0	0.3	21.5	78.2	0%	Locked/sample port closed. Valve threads not tightly sealed.
GP-20	0.0	6.1	8.6	85.2	0%	Flush mount/sample port closed
GP-21	Drew water into tubing before meaurements could be collected.					Flush mount/sample port closed
GP-22	0.0	1.4	18.1	80.5	0%	Flush mount/sample port closed
GP-23	0.0	1.6	20.2	78.2	0%	Locked/sample port closed
GP-24	0.0	3.8	18.2	78.0	0%	Locked/sample port open
GP-25	0.0	3.2	18.8	78.0	0%	Locked/sample port closed
GP-26	0.0	4.8	17.1	78.1	0%	Locked/sample port open

NOTES:
GP - Gas probe location
(1) - Percent Lower Explosive Limit (LEL) calculated based on % methane recorded and assuming an LEL for methane of 50,000 ppmv (5%)
Bold indicates methane detection. Shading indicates methane detection >100%LEL

Methane Monitoring Results
December 2015
Site 1 - Old Base Landfill Former NTC Bainbridge, Port Deposit, Maryland

Date: December 29, 2016
Personnel: (b) (4)
Start Time: 0752
Weather: Rain, 40+ °F
Barometric Pressure (inches Hg): 29.57
Relative Humidity (%) 95
Finish Time: 1057

Instrument: LandTec GEM-2000 **Serial Number:** GM 11862/09 **Calibrated (Y/N):** Yes

Sampling Location	Measurement at Indicated Gas Probe					
	CH_4 %	CO_2 %	O_2 %	Balance %	LEL [(1)] %	Notes / Observations
GP-1	0.0	5.2	15.2	79.6	0%	Locked/sample port closed
GP-2	0.0	12.3	6.3	81.4	0%	Locked/sample port closed
GP-3	0.0	8.4	12.9	78.7	0%	Locked/sample port closed
GP-4	0.0	4.1	17.4	78.5	0%	Locked/sample port closed
GP-5	0.0	6.7	12.3	81.0	0%	Locked/sample port closed
GP-6	**0.5**	8.3	1.6	89.6	**10%**	Locked/sample port closed
GP-7	**18.9**	14.9	0.9	65.3	**378%**	Locked/sample port closed
GP-8	0.0	0.5	6.9	92.6	0%	Locked/sample port closed
GP-9	0.0	1.5	12.7	85.8	0%	Locked/sample port closed
GP-10	0.0	5.4	15.8	78.8	0%	Locked/sample port closed
GP-11	0.0	1.2	20.4	78.4	0%	Locked/sample port closed
GP-12	**5.2**	4.2	15.3	75.3	**104%**	Flush mount/sample port closed. Pumped water from probe. Sustained approx 0.25 gpm.
GP-13	0.0	4.3	10.9	84.8	0%	Flush mount/sample port closed
GP-14	0.0	8.7	7.4	83.9	0%	Locked/sample port closed
GP-15	0.0	7.2	14.1	78.7	0%	Locked/sample port closed
GP-16	**8.0**	15.2	0.0	76.8	**160%**	Locked/sample port closed
GP-17	**13.5**	10.2	7.3	69.0	**270%**	Locked/sample port closed
GP-18	**21.6**	16.3	0.0	62.1	**432%**	Locked/sample port closed
GP-19	0.0	0.2	21.3	78.5	0%	Locked/sample port closed. Valve threads not tightly sealed.
GP-20	0.0	2.3	10.6	87.1	0%	Flush mount/sample port closed
GP-21	0.0	2.1	18.5	79.4	0%	Flush mount/sample port closed. Substantial water in probe.
GP-22	0.0	1.4	15.4	83.2	0%	Flush mount/sample port closed
GP-23	0.0	2.3	19.2	78.5	0%	Locked/sample port closed
GP-24	0.0	0.5	21.0	78.5	0%	Locked/sample port closed
GP-25	0.0	0.5	20.9	78.6	0%	Locked/sample port closed
GP-26	0.0	2.2	20.4	77.4	0%	Locked/sample port open

NOTES:
GP - Gas probe location
(1) - Percent Lower Explosive Limit (LEL) calculated based on % methane recorded and assuming an LEL for methane of 50,000 ppmv (5%)
Bold indicates methane detection. Shading indicates methane detection >100%LEL